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L2 ANSWER 21 OF 26 USPATFULL
AN 1998:124423 USPATFULL
TI Production of 1,3-propanediol from glycerol by recombinant bacteria
expressing recombinant diol dehydratase
IN Nagarajan, Vasantha, Wilmington, DE, United States
Nakamura, Charles Edwin, Claymont, DE, United States
PA E. I. du Pont de Nemours and Company, Wilmington, DE, United States
(U.S. corporation)
PI US 5821092 19981013
AI US 1996-687852 19960726 (8)
RLI Division of Ser. No. US 1995-440377, filed on 12 May 1995, now
patented,
Pat. No. US 5633362
DT Utility
FS Granted
EXNAM Primary Examiner: Grimes, Eric; Assistant Examiner: Nashed, Nashaat T.
CLMN Number of Claims: 10
ECL Exemplary Claim: 1
DRWN 5 Drawing Figure(s); 4 Drawing Page(s)
LN.CNT 884

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L1 ANSWER 21 OF 26 USPATFULL

AB The present invention provides a process for the biotransformation of a carbohydrate carbon source to 1,3-propanediol using mixed yeast and bacterial cultures wherein the carbohydrate is first fermented to glycerol by the yeast cell and then converted to 1,3-propanediol by the bacterial cell containing an active diol or glycerol dehydratase enzyme in this process both the yeast and bacterial cultures are supported on the same carbon source, and 1,3-propanediol is isolated from the media.

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2 ANSWER 25 OF 26 USPATFULL
AN 97:9921 USPATFULL
TI Process for making 1,3-propanediol from carbohydrates using mixed
microbial cultures
IN Haynie, Sharon L., Philadelphia, PA, United States
Wagner, Lorraine W., Newark, DE, United States
PA E. I. du Pont de Nemours and Company, Wilmington, DE, United States
(U.S. corporation)
PI US 5599689 19970204
AI US 1995-440379 19950512 (8)
DT Utility
FS Granted
EXNAM Primary Examiner: Lilling, Herbert J.
CLMN Number of Claims: 1
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 981

PA 2

2 ANSWER 24 OF 26 USPATFULL
AN 97:45122 USPATFULL
TI Production of 1,3-propanediol from glycerol by recombinant bacteria
expressing recombinant diol dehydratase
IN Nagarajan, Vasantha, Wilmington, DE, United States
Nakamura, Charles E., Claymont, DE, United States
PA E. I. Du Pont de Nemours and Company, Wilmington, DE, United States
(U.S. corporation)
PI ~~US 5633362~~ 19970527
AI US 1995-440377 19950512 (8)
DT Utility
FS Granted
EXNAM Primary Examiner: Zitomer, Stephanie W.; Assistant Examiner: Fredman,
Jeffrey
CLMN Number of Claims: 10
ECL Exemplary Claim: 1
DRWN 5 Drawing Figure(s); 4 Drawing Page(s)
LN.CNT 831

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2 ANSWER 23 OF 26 USPATFULL
AN 97:104308 USPATFULL
TI Bioconversion of a fermentable carbon source to 1,3-propanediol by a
single microorganism
IN Laffend, Lisa Anne, Wilmington, DE, United States
Nagarajan, Vasantha, Wilmington, DE, United States
Nakamura, Charles Edwin, Claymont, DE, United States
PA E. I. Du Pont de Nemours and Company, Wilmington, DE, United States
(U.S. corporation)
PI ~~US~~ 5686276 19971111
AI US 1995-440293 19950512 (8)
DT Utility
FS Granted
EXNAM Primary Examiner: Lilling, Herbert J.
CLMN Number of Claims: 16
ECL Exemplary Claim: 1
DRWN 2 Drawing Figure(s); 2 Drawing Page(s)

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ANSWER 8 OF 26 USPATFULL

AN 2002:144109 USPATFULL
TI Process for the production of 1,3-propanediol by fermentation
IN Defretin, Sophie, Locon, FRANCE
Delelis, Brigitte, Vendin les Bethune, FRANCE
Segueilha, Laurent, Lambersart, FRANCE
PA Roquette Freres, Lestrem, FRANCE (non-U.S. corporation)
PI ~~US 6406895~~ B1 20020618
AI US 2000-696622 20001025 (9)
PRAI FR 1999-14072 19991109
DT Utility
FS GRANTED
EXNAM Primary Examiner: Tate, Christoper R.; Assistant Examiner: Srivastava,
Kailash C.
LREP Henderson & Sturm LLP
CLMN Number of Claims: 7
ECL Exemplary Claim: 1
DRWN 0 Drawing Figure(s); 0 Drawing Page(s)

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L1 ANSWER 8 OF 26 USPATFULL

AB The present invention relates to a process for the production of 1,3-propanediol by the fermentation of a 1,3-propanediol-producing microorganism in a fermentation medium containing glucose, characterized

in that the fermentation is carried out without mechanical agitation, with the maintenance of an air retention greater than or equal to 50%, expressed as the volume of gas relative to the total volume of the liquid phase of the fermentation medium, and with the maintenance of a high cell density and a microorganism viability value, determined by a test A, greater than or equal to 95%, preferably of between 95 and 99%, by controlling frothing in the fermentation medium.

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L2 ANSWER 17 OF 26 USPATFULL
AN 2000:146589 USPATFULL
TI Process for the production of 1,3-propanediol
IN Brossmer, Christoph, Frankfurt, Germany, Federal Republic of
Arntz, Dietrich, Mobile, AL, United States
PA E. I. du Pont de Nemours and Company, Wilmington, DE, United States
(U.S. corporation)
PI ~~US 6140543~~ 20001031
AI US 1998-16444 19980130 (9)
PRAI DE 1997-19703383 19970130
DT Utility
FS Granted
EXNAM Primary Examiner: Geist, Gary; Assistant Examiner: White, Everett
CLMN Number of Claims: 5
ECL Exemplary Claim: 1
DRWN No Drawings

not PA

1 ANSWER 17 OF 26 USPATFULL

AB Recombinant organisms are provided comprising genes encoding glycerol-3-phosphate dehydrogenase, glycerol-3-phosphatase, glycerol dehydratase and 1,3-propanediol oxidoreductase activities useful for the production of 1,3-propanediol from a variety of carbon substrates.

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ANSWER 19 OF 26 USPATFULL

AN 2000:18270 USPATFULL
TI Bioconversion of a fermentable carbon source to 1,3-propanediol by a
single microorganism
IN Laffend, Lisa Anne, Wilmington, DE, United States
Nagarajan, Vasantha, Wilmington, DE, United States
Nakamura, Charles Edwin, Claymont, DE, United States
PA E. I. du Pont de Nemours and Company, Wilmington, DE, United States
(U.S. corporation)
Genencor International Inc., Palo Alto, CA, United States (U.S.
corporation)
PI ~~US 6025184~~ 20000215
AI US 1997-966794 19971110 (8)
RLI Division of Ser. No. US 1995-440293, filed on 12 May 1995, now
patented,
Pat. No. US 5686276
DT Utility
FS Granted
EXNAM Primary Examiner: Ketter, James; Assistant Examiner: Yucel, Irem
CLMN Number of Claims: 4
ECL Exemplary Claim: 1
DRWN 2 Drawing Figure(s); 2 Drawing Page(s)
LN.CNT 1105
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

Not PA

1 ANSWER 19 OF 26 USPATFULL

AB A process is provided for the bioconversion of a carbon substrate to 1,3-propanediol by a single organism utilizing either microorganisms containing the genes encoding for an active glycerol or diol

dehydratase

enzyme by contacting these organisms with a carbon substrate under the appropriate fermentation conditions.

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ANSWER 10 OF 26 USPATFULL

AN 2002:88679 USPATFULL
TI Cobalt-catalyzed process for preparing 1,3-propanediol
IN Han, Yuan-Zhang, West Chester, PA, United States
PA Arco Chemical Technology, L.P., Greenville, DE, United States (U.S.
corporation)
PI US 6376720 B1 20020423
AI US 2001-882346 20010615 (9)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Padmanabhan, Sreeni
LREP Long, William C.
CLMN Number of Claims: 5

Nr

2 ANSWER 14 OF 26 USPATFULL
AN 2001:215208 USPATFULL
TI Cobalt-catalyzed process for preparing 1,3-propanediol
IN Han, Yuan-Zhang, West Chester, PA, United States
PA Arco Chemical Technology, L.P., Greenville, DE, United States (U.S.
corporation)
PI US 6323374 B1 20011127
AI US 2001-882347 20010615 (9)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Siegel, Alan
LREP Long, William C.
CLMN Number of Claims: 6
ECL Exemplary Claim: 1
DRWN 1 Drawing Figure(s); 1 Drawing Page(s)

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L2 ANSWER 9 OF 26 USPATFULL
AN 2002:88682 USPATFULL
TI Cobalt-catalyzed process for preparing 1,3-propanediol
IN Han, Yuan-Zhang, West Chester, PA, United States
PA Arco Chemical Technology, L.P., Greenville, DE, United States (U.S.
corporation)
PI US 6376724 B1 20020423
AI US 2001-882641 20010615 (9)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Siegel, Alan
LREP Long, William C.
CLMN Number of Claims: 8
ECL Exemplary Claim: 1
DRWN 1 Drawing Figure(s); 1 Drawing Page(s)
LN.CNT 345

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N 824595 EUROPATFULL ED 20011213 EW 200149 FS PS
TIEN PROCESS FOR MAKING 1,3-PROPANEDIOL FROM CARBOHYDRATES USING MIXED
MICROBIAL CULTURES.
TIDE VERFAHREN ZUR HERSTELLUNG VON 1,3-PROPANDIOL AUS KOHLENHYDRATEN UNTER
VERWENDUNG GEMISCHTER MIKROBIELLER KULTUREN.
TIFR PROCEDE DE FABRICATION DE 1,3-PROPANEDIOL A PARTIR D'HYDRATES DE
CARBONE
A L'AIDE DE CULTURES MICROBIENNES MELANGEES.
IN HAYNIE, Sharon, Loretta, 963 North Randolph Street, Philadelphia, PA
19123-1407, US;
WAGNER, Lorraine, Winona, 249 West Chestnut Hill Road, Newark, DE
19713-2212, US
PA E.I. DU PONT DE NEMOURS AND COMPANY, 1007 Market Street, Wilmington
Delaware 19898, US
PAN 200580
AG Jones, Alan John, CARPMAELS & RANSFORD 43 Bloomsbury Square, London,
WC1A 2RA, GB
AGN 32391
OS BEPB2001066 EP 0824595 B1 0017
SO Wila-EPS-2001-H49-T1
DT Patent
LA Anmeldung in Englisch; Veroeffentlichung in Englisch

Nr

2002:201883 USPATFULL

TI Method for the production of 1,3-propanediol by recombinant organisms
comprising genes for vitamin B12 transport

IN Bulthuis, Ben A., Hoofddorp, NETHERLANDS
Whited, Gregory M., Belmont, CA, United States
Trimbur, Donald E., Redwood City, CA, United States
Gatenby, Anthony A., Wilmington, DE, United States

PA E. I. du Pont de Nemours and Company, Wilmington, DE, United States
(U.S. corporation)
Genencor International, Palo Alto, CA, United States (U.S. corporation)

PI US 6432686 B1 20020813

AI US 1999-307973 19990510 (9)

PRAI US 1998-85190P 19980512 (60)

DT Utility

FS GRANTED

EXNAM Primary Examiner: Prouty, Rebecca E.; Assistant Examiner: Monshipouri,
Maryam

CLMN Number of Claims: 13

ECL Exemplary Claim: 1

DRWN 0 Drawing Figure(s); 0 Drawing Page(s)

LN.CNT 2037

L1 ANSWER 6 OF 26 USPATFULL

AB Recombinant organisms are provided comprising genes encoding genes encoding glycerol dehydratase, 1,3-propanediol oxidoreductase, a gene encoding vitamin B.sub.12 receptor precursor (BtuB), a gene encoding vitamin B.sub.12 transport system permease protein (BtuC) and a gene encoding vitamin B.sub.12 transport ATP-binding protein (BtuD). The recombinant microorganism is contacted with a carbon substrate and 1,3-propanediol is isolated from the growth media.